

Reporting Summary

Nature Research wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Research policies, see our [Editorial Policies](#) and the [Editorial Policy Checklist](#).

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a Confirmed

- | | | |
|-------------------------------------|-------------------------------------|--|
| ☐ | ☒ | The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement |
| ☐ | ☒ | A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly |
| ☐ | ☒ | The statistical test(s) used AND whether they are one- or two-sided
<i>Only common tests should be described solely by name; describe more complex techniques in the Methods section.</i> |
| ☒ | ☐ | A description of all covariates tested |
| ☒ | ☐ | A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons |
| ☐ | ☒ | A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals) |
| ☐ | ☒ | For null hypothesis testing, the test statistic (e.g. F , t , r) with confidence intervals, effect sizes, degrees of freedom and P value noted
<i>Give P values as exact values whenever suitable.</i> |
| ☒ | ☐ | For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings |
| ☒ | ☐ | For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes |
| ☒ | ☐ | Estimates of effect sizes (e.g. Cohen's d , Pearson's r), indicating how they were calculated |

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection	SoftMax Pro Version 6.4 (Molecular Devices), ImageQuant Version 1.2 (GE Healthcare), MultiMode Version 8 (Bruker), MO. Control Version 1.6 (Nano Temper Technologies), NIS Elements Version 5.20.02 (Nikon Instruments Inc.), Leica Application Suite X Version 3.7.0.20979 (Leica Microsystems)
Data analysis	SEDFIT Version 15.01b (NIH), SEDNTERP Version 20130813BETA (Biomolecular Interaction technologies center(BITC)), Nanoscope analysis Version 1.4 (Bruker), MO. Affinity Analysis Version 2.3 (Nano Temper Technologies), Image J Version 1.52o (NIH), IgorPro Version 6.3.6.0 (Wavemetrics), Excel 2016 MSO (Version 2110 build 16.0.14527.20234) (Microsoft), GraphPad Prism8 Version 8.4.2 (679) (GraphPad Software)

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

Source data are provided for the results presented in Main and Extended Data figures. Additional data are available from the corresponding author upon reasonable request.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☒ Life sciences ☐ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see [nature.com/documents/nr-reporting-summary-flat.pdf](https://www.nature.com/documents/nr-reporting-summary-flat.pdf)

Life sciences study design

All studies must disclose on these points even when the disclosure is negative.

Sample size	No statistical method was used to predetermine sample size. Sample sizes were determined based on previous studies (e.g., Wentink et al., Nature, 587, 483–488 (2020)) in the field to enable statistical analyses and ensure reproducibility.
Data exclusions	No data were excluded from analysis.
Replication	All key experiments were reproduced with at least two different fibril preparations. Variability in between the experiments was calculated and plotted as SD as indicated in the relevant figure legends. All attempts at replication were successful.
Randomization	Not applicable; Samples were not randomized.
Blinding	Not applicable; Experiments were not blinded.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems		Methods	
n/a	Involved in the study	n/a	Involved in the study
☐	☒ Antibodies	☒	☐ ChIP-seq
☒	☐ Eukaryotic cell lines	☒	☐ Flow cytometry
☒	☐ Palaeontology and archaeology	☒	☐ MRI-based neuroimaging
☒	☐ Animals and other organisms		
☒	☐ Human research participants		
☒	☐ Clinical data		
☒	☐ Dual use research of concern		

Antibodies

Antibodies used	An anti-Sup35 antibody (rabbit, polyclonal), prepared by RIKEN RRD, was used for Western Blotting. An anti-Biotin antibody (Mice, Monoclonal (unknown clone)), provided by Jackson Immuno Research (Catalog number: 200-002-211), was used for Western Blotting.
Validation	Validation for the anti-Sup35 antibody is shown in Ohhashi et al, Nat. Chem. Biol. 6, 225-230 (2010). Validation for the anti-Biotin antibody is shown in Reed et al, J Vitrol. e00883-20 (2021).